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EXAMINER	
DANIEL JR, WILLIE J	

ART UNIT	PAPER NUMBER
2617	

DATE MAILED: 08/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/853,102	KO, MOON-JUNG	
	Examiner	Art Unit	
	Willie J. Daniel, Jr.	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 4-8* is/are rejected.

7)☒ Claim(s) *2* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's amendment filed on 12 January 2006. **Claims 1-2** and **4-8** are now pending in the present application and claim 3 is canceled. This office action is made **Non-Final.**

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and **4-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lim** (**US 6,628,974 B1**) in view of **Iwata et al.** (hereinafter Iwata) (**US 5,723,959**) and **Lemirande** (**US 4,394,607**).

Regarding **claim 1**, Lim teaches of an automatically and manually folded cellular phone (1) which reads on the claimed "portable wireless terminal" having at least a main body (3) and a sub-body (2) installed on the main body (3) so as to be opened and closed comprising:

a first sensor (51) for sensing a complete opening of the sub-body (2) from the main body (3) (see Figs. 5 and 6);

a second sensor (52) for sensing a complete closing of the sub-body (2) onto the main body (3) (see Figs. 5 and 6);

an driving section (11) which reads on the claimed "opening/closing device" for opening/closing the sub-body (2) in accordance with a control (5) of opening/closing of the sub-body (2) and having a motor (12) housed inside of the terminal (1) (see abstract; col. 4, line 55 - col. 5, line 24; col. 6, line 48 - col. 7, line 49; col. 8, lines 55-57; col. 9, lines 29-31; col. 10, lines 35-36; Figs. 5-6, 10-12, and 20). Lim does not specifically disclose having the features a motor overcurrent monitoring section having a current sensing resistor located between a first node and a second node for monitoring current flow to the motor to determine an overload condition of the motor determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; and a control device for controlling the operation of motor in accordance with the overload condition as determined by the motor overcurrent monitoring section when complete opening/closing of the sub-body is sensed by the first and the second sensors when the opening/closing device automatically opens/closes the sub-body, and after at least one additional cycle of the motor after an overload condition is determined. However, the examiner maintains that the features a motor overcurrent monitoring section for monitoring current flow to the motor to determine an overload condition of the motor; and a control device for controlling the operation of motor in accordance with the overload condition as determined by the motor overcurrent monitoring section when complete opening/closing of the sub-body is sensed by the first and the second sensors when the opening/closing device automatically opens/closes the sub-body, and after at least one additional cycle of the motor after an overload condition is determined was well known in the art, as taught by Iwata.

In the same field of endeavor, Iwata teaches of having the features

a motor lock detection circuit (88) which reads on the claimed "motor overcurrent monitoring section" for monitoring current flow to the motor (12) to determine an overload condition of the motor (12) (see col. 4, lines 1-5; col. 5, line 66 - col. 6, line 10; Fig. 1), where the detection circuit is connected to a resistor (18); and

a control device (10) for controlling operation of the motor (12) in accordance with the overload condition as determined by the motor overcurrent monitoring section (88) when complete opening/closing (raising/lowering) of the window glass which reads on the claimed "sub-body" is sensed by the first and the second sensors when the opening/closing (raising/lowering) device automatically opens/closes (raising/lowering) the sub-body (see col. 4, lines 1-5; col. 5, line 66 - col. 6, line 10; col. 11, line 64 - col. 12, line 3; Fig. 1), where the electric motor has an overload detection circuit for monitoring the current of the complete raising/lowering of the window, and

after at least one additional cycle of the motor (12) after an overload condition is determined (see col. 7, line 52 - col. 8, line 6; col. 8, lines 30-36; col. 9, lines 45-55; col. 11, lines 44-63; col. 5, lines 32-55; col. 5, line 65 - col. 6, lines 46; Fig. 2a-3d; 12a-13d), where the motor has a detection circuit to monitor the complete raising/lowering (e.g., open/close) of a movable body (e.g., window) and the repeated continuous attempts to close/open the movable body. After a repeated attempt(s) to open/close the movable body, the detection circuit determines the movable body to be completely opened/closed or a foreign object obstructing the movement and as a result of the repeated attempts over time intervals the motor reverses direction and stops.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the features a motor overcurrent monitoring section for monitoring current flow to the motor to determine an overload condition of the motor; and a control device for controlling the operation of motor in accordance with the overload condition as determined by the motor overcurrent monitoring section when complete opening/closing of the sub-body is sensed by the first and the second sensors when the opening/closing device automatically opens/closes the sub-body, and after at least one additional cycle of the motor after an overload condition is determined, in order to have a motor that that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability, as taught by (see Iwata - abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3). The combination of Lim and Iwata does not specifically disclose having the feature having a current sensing resistor located between a first node and a second node determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature having a current sensing resistor located between a first node and a second node determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

In the same field of endeavor, Lemirande discloses the feature having a current sensing resistor (R44) located between a first node and a second node determining an overload condition of the motor based on a difference between a first voltage applied to the

first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature having a current sensing resistor located between a first node and a second node determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node, in order to have a load monitoring circuit which stops the motor during current overload, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Regarding **claim 4**, Lim teaches of a method for controlling opening/closing of a sub-body (1) in a foldable portable wireless terminal (1) having at least a main body (3), a sub-body (1) installed on the main body (3) so as to be openable and closable, a first sensor (52) installed in the main body (3) for sensing a complete opening of the sub-body from the main body, and a second sensor (51) installed in the main body (3) and the sub-body (2) for sensing a complete closing of the sub-body onto the main body (3) (see col. 7, lines 4-32,49-57; col. 8, lines 43-49; Figs. 6, 12), where the position detection section (50) has position detectors (sensors) integrally connected in the main-body and sub-body, the method comprising the steps of:

determining whether or not a complete opening/closing of the sub-body (2) is sensed by the first and the second sensors (50) during automatic opening/closing of the sub-body (2) (see abstract; col. 4, lines 55 - col. 5, line 24; col. 6, lines 48 - col. 7, line 49; Figs. 5-6 and 10-12). Lim does not specifically disclose the features determining an overload condition of a motor housed inside of the terminal based on current supplied to the motor if incomplete opening/closing of the sub-body is sensed by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; and controlling operation of the motor in accordance with the determined overload condition, and after at least one additional cycle of the motor after an overload condition is determined. However, the examiner maintains that the features determining an overload condition of a motor housed inside of the terminal based on current supplied to the motor if incomplete opening/closing of the sub-body is sensed; and controlling operation of the motor in accordance with the determined overload condition, and after at least one additional cycle of the motor after an overload condition is determined was well known in the art, as taught by Iwata.

Iwata further teaches of having the features

determining an overload condition of a motor (12) housed inside of the terminal based on current supplied to the motor if incomplete opening/closing (raising/lowering) of the sub-body is sensed (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where a foreign object is detected to prevent the raising/lowering of the window and the motor is controlled according to the overload condition; and

controlling operation of the motor (12) in accordance with the determined overload condition (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where the motor is controlled according to the detected overload condition, and

after at least one additional cycle of the motor (12) after an overload condition is determined (see col. 7, line 52 - col. 8, line 6; col. 8, lines 30-36; col. 9, lines 45-55; col. 11, lines 44-63; col. 5, lines 32-55; col. 5, line 65 - col. 6, lines 46; Fig. 2a-3d; 12a-13d), where the motor has a detection circuit to monitor the complete raising/lowering (e.g., open/close) of a movable body (e.g., window) and the repeated continuous attempts to close/open the movable body. After a repeated attempt(s) to open/close the movable body, the detection circuit determines the movable body to be completely opened/closed or a foreign object obstructing the movement and as a result of the repeated attempts over time intervals the motor reverses direction and stops.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the features determining an overload condition of a motor housed inside of the terminal based on current supplied to the motor if incomplete opening/closing of the sub-body is sensed; and controlling operation of the motor in accordance with the determined overload condition, and after at least one additional cycle of the motor after an overload condition is determined, in order to have a motor that that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability, as taught by Iwata (see abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3). The combination of Lim and Iwata does not specifically disclose having the feature by using

a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

Lemirande further discloses the feature by using a current sensing resistor (R44) located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node, in order to have a load monitoring circuit which stops the motor during current overload, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Regarding **claim 5**, Lim teaches of having a motor (12) (see col. 10, line 35; Fig. 20). Lim does not specifically disclose having the feature wherein the determination of the overload condition of the motor is made based on a voltage difference corresponding to a current difference between the current supplied to the motor in normal operation and the current supplied to the motor in the overload condition. However, the examiner maintains that the feature wherein the determination of the overload condition of the motor is made based on a voltage difference corresponding to a current difference between the current supplied to the motor in normal operation and the current supplied to the motor in the overload condition was well known in the art, as taught by Iwata.

The combination of Iwata and Lemirande as applied in claim 4, in addition Iwata further teaches of having the feature

wherein the determination of the overload condition of the motor (12) is made based on a voltage difference corresponding to a current difference between the current supplied to the motor in normal operation and the current supplied to the motor in the overload condition (col. 5, line 66 - col. 6, line 17; col. 7, line 51 - col. 8, line 14; Figs. 1-2), where the current-voltage difference is used to determine the overload condition of the motor.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim, Iwata, and Lemirande to have the feature wherein the determination of the overload condition of the motor is made based on a voltage difference corresponding to a current difference between the current supplied to the motor in normal operation and the current supplied to the motor in the overload condition, in order to have a motor that that is capable of raising/lowering (opening/closing) an object

(e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability (see Iwata - abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3).

Regarding **claim 6**, Lim teaches a method for controlling opening/closing of a sub-body (2) in a foldable portable wireless terminal (1) having a main body (3) and a sub-body (2) installed on the main body (3) so as to be openable and closable, the method comprising the steps of:

operating a motor (12) for automatically opening/closing the sub-body in accordance with an input by a user (see abstract; col. 4, lines 55 - col. 5, line 24; col. 8, lines 53-57; col. 9, lines 29-31; col. 10, line 35; Figs. 5, 12 and 20). Lim does not specifically disclose having the features determining an overload condition of the motor for opening/closing the sub-body based on a voltage difference corresponding to a current difference between the current supplied to the motor in a normal operation and the current supplied to the motor in the overload condition determining the overload condition of motor by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; and controlling operation of the motor for opening/closing the sub-body in accordance with the determined overload condition, and after at least one additional cycle of the motor after an overload condition is determined. However, the examiner maintains that the features determining an overload condition of the motor for opening/closing the sub-body based on a voltage difference corresponding to a current difference between the current supplied to the motor in a normal operation and the current supplied to the motor in the overload condition determining the overload condition of

motor; and controlling operation of the motor for opening/closing the sub-body in accordance with the determined overload condition, and after at least one additional cycle of the motor after an overload condition is determined was well known in the art, as taught by Iwata.

Iwata further teaches of having the features

determining an overload condition of the motor for opening/closing (raising/lowering) the sub-body based on a voltage difference corresponding to a current difference between the current supplied to the motor (12) in a normal operation and the current supplied to the motor (12) in the overload condition (col. 5, line 66 - col. 6, line 17; col. 7, line 51 - col. 8, line 62; Figs. 1-2), where the current-voltage is determine to the overload condition of the motor; and

controlling operation of the motor (12) for opening/closing (raising/lowering) the sub-body in accordance with the determined overload condition (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where the motor is controlled according to the detected overload condition, and

after at least one additional cycle of the motor (12) after an overload condition is determined (see col. 7, line 52 - col. 8, line 6; col. 8, lines 30-36; col. 9, lines 45-55; col. 11, lines 44-63; col. 5, lines 32-55; col. 5, line 65 - col. 6, lines 46; Fig. 2a-3d; 12a-13d), where the motor has a detection circuit to monitor the complete raising/lowering (e.g., open/close) of a movable body (e.g., window) and the repeated continuous attempts to close/open the movable body. After a repeated attempt(s) to open/close the movable body, the detection circuit determines the movable body to be completely opened/closed or a foreign object obstructing the movement and as a result of the repeated attempts over time intervals the motor reverses direction and stops.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the feature determining an overload condition of the motor for opening/closing the sub-body based on a voltage difference corresponding to a current difference between the current supplied to the motor in a normal operation and the current supplied to the motor in the overload condition determining the overload condition of motor; and controlling operation of the motor for opening/closing the sub-body in accordance with the determined overload condition, and after at least one additional cycle of the motor after an overload condition is determined, in order to have a motor that that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability, as taught by Iwata (see abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3). The combination of Lim and Iwata does not specifically disclose having the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

Lemirande further discloses the feature by using a current sensing resistor (R44) located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second

voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Regarding **claim 7**, Lim teaches a method for controlling opening/closing of a sub-body in a foldable portable wireless terminal (1) having at least a main body (3), a sub-body (2) installed on the main body (3) so as to be openable and closable, a first sensor (51) for sensing a complete opening of the sub-body from the main body (3), and a second sensor (52) for sensing a complete closing of the sub-body (2) onto the main body (3) (see abstract; col. 4, lines 55 - col. 5, line 24; col. 6, lines 48 - col. 7, line 49; Figs. 5-10, 6, and 10-12), the method comprising the steps of:

controlling opening/closing of the sub-body (see abstract; col. 4, lines 55 - col. 5, line 24; col. 6, lines 48 - col. 7, line 49; Figs. 5-10, 6, and 10-12), where the switch operates the motor to open/close the folder (2)

returning the sub-body (2) to an initial state (see col. 10, lines 20-25), where the folder (2) is moved to an initial position. Lim does not specifically disclose having the features determining an overloaded state of a motor housed inside of the terminal based on the current supplied to the housed motor if incomplete opening/closing of the sub-body is sensed by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; controlling opening/closing of the sub-body repeatedly as many times as predetermined if incomplete opening/closing of the sub-body has been sensed and the housed motor is in an overloaded state; and returning the sub-body to an initial state if incomplete opening/closing of the sub-body is sensed and the overloaded state continues after at least one additional cycle of the motor. However, the examiner maintains that the features determining an overloaded state of a motor housed inside of the terminal based on the current supplied to the housed motor if incomplete opening/closing of the sub-body is sensed; controlling opening/closing of the sub-body repeatedly as many times as predetermined if incomplete opening/closing of the sub-body has been sensed and the housed motor is in an overloaded state; and returning the sub-body to an initial state if incomplete opening/closing of the sub-body is sensed and the overloaded state continues after at least one additional cycle of the motor was well known in the art, as taught by Iwata.

Iwata further teaches of having the following:

determining an overloaded state of a motor (12) housed inside of the terminal based on the current supplied to the housed motor (12) if incomplete opening/closing

(raising/lowering) of the sub-body is sensed (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where a foreign object is detected to prevent the raising/lowering of the window and the motor is controlled according to the overload condition;

controlling opening/closing of the sub-body repeatedly as many times as predetermined if incomplete opening/closing of the sub-body has been sensed and the housed motor is in an overloaded state (see col. 7, line 25 - col. 9, line 55; col. 21, line 41 - col. 23, line 22; Fig. 2a-3d; 12a-13d), where the motor continuously attempts to close a certain amount a times based on the timer before reversing operation and stopping; and

returning the sub-body to an initial state if incomplete opening/closing of the sub-body is sensed and the overloaded state continues after at least one additional cycle of the motor (12) (see col. 7, line 52 - col. 8, line 6; col. 8, lines 30-36; col. 9, lines 45-55; col. 11, lines 44-63; col. 5, lines 32-55; col. 5, line 65 - col. 6, lines 46; Fig. 2a-3d; 12a-13d), where the motor has a detection circuit to monitor the complete raising/lowering (e.g., open/close) of a movable body (e.g., window) and the repeated continuous attempts to close/open the movable body. After a repeated attempt(s) to open/close the movable body, the detection circuit determines the movable body to be completely opened/closed or a foreign object obstructing the movement and as a result of the repeated attempts over time intervals the motor reverses operation and stops thereby returning the window to an initial state.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the features determining an overloaded state of a motor housed inside of the terminal based on the current supplied to the housed motor if incomplete opening/closing of the sub-body is sensed by

using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; controlling opening/closing of the sub-body repeatedly as many times as predetermined if incomplete opening/closing of the sub-body has been sensed and the housed motor is in an overloaded state; and returning the sub-body to an initial state if incomplete opening/closing of the sub-body is sensed and the overloaded state continues after at least one additional cycle of the motor, in order to have a motor that that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability (see Iwata - abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3). The combination of Lim and Iwata does not specifically disclose having the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

Lemirande further discloses the feature by using a current sensing resistor (R44) located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62,

abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Regarding **claim 8**, Lim teaches a method for controlling opening/closing of a sub-body in an automatically and manually folded portable wireless terminal (1) having at least a main body (3), a sub-body (2) installed on the main body (2) so as to be openable and closable, and a sensor (50) for sensing a complete opening of the sub-body from the main body, the method comprising the steps of:

determining whether or not the sensor (50) senses a complete opening of the sub-body during automatic opening (see abstract; col. 4, line 55 - col. 5, line 24; col. 6, line 48 - col. 7, line 49; and as shown in Figs. 5-6 and 10-12). Lim does not specifically disclose having the features determining an overloaded state of a motor housed inside of the terminal based on current supplied to the housed motor if incomplete opening is sensed by the sensor and by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage

applied to the first node and a second voltage applied to the second node; controlling opening of the sub-body as many times as predetermined if incomplete opening is sensed and the housed motor is determined to be in an overloaded state; and ceasing operation of the housed motor if incomplete opening of the sub-body is sensed and the overloaded state of the housed motor continues even after controlling the opening of the sub-body the predetermined times. However, the examiner maintains that the features determining an overloaded state of a motor housed inside of the terminal based on current supplied to the housed motor if incomplete opening is sensed by the sensor; controlling opening of the sub-body as many times as predetermined if incomplete opening is sensed and the housed motor is determined to be in an overloaded state; and ceasing operation of the housed motor if incomplete opening of the sub-body is sensed and the overloaded state of the housed motor continues even after controlling the opening of the sub-body the predetermined times was well known in the art, as taught by Iwata.

Iwata further teaches of having the features

determining an overloaded state of a motor (12) housed inside of the terminal based on current supplied to the housed motor (12) if incomplete opening is sensed by the sensor (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where a foreign object is detected to prevent the raising/lowering of the window and the motor is controlled according to the overload;

controlling opening of the sub-body as many times as predetermined if incomplete opening is sensed and the housed motor (12) is determined to be in an overloaded state (see col. 7, line 25 - col. 9, line 55; col. 21, line 41 - col. 23, line 22; Fig. 2a-3d; 12a-13d), where

the motor continuously attempts to close/open a certain amount a times based on the timer before reversing operation and stopping; and

ceasing operation of the housed motor (12) if incomplete opening of the sub-body is sensed and the overloaded state of the housed motor (12) continues after at least one additional cycle of the motor (12) (see col. 7, line 52 - col. 8, line 6; col. 8, lines 30-36; col. 9, lines 45-55; col. 11, lines 44-63; col. 5, lines 32-55; col. 5, line 65 - col. 6, lines 46; Fig. 2a-3d; 12a-13d), where the motor has a detection circuit to monitor the complete raising/lowering (e.g., open/close) of a movable body (e.g., window) and the repeated continuous attempts to close/open the movable body. After a repeated attempt(s) to open/close the movable body, the detection circuit determines the movable body to be completely opened/closed or a foreign object obstructing the movement and as a result of the repeated attempts over time intervals the motor reverses operation and stops thereby returning the window to an initial state.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the features determining an overloaded state of a motor housed inside of the terminal based on current supplied to the housed motor if incomplete opening is sensed by the sensor; controlling opening of the sub-body as many times as predetermined if incomplete opening is sensed and the housed motor is determined to be in an overloaded state; and ceasing operation of the housed motor if incomplete opening of the sub-body is sensed and the overloaded state of the housed motor continues after at least one additional cycle of the motor, in order to have a motor that is capable of raising/lowering (opening/closing) an object (e.g., window glass)

which has a controlling device to prevent faulty operation and maintain stability (see Iwata - abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3). The combination of Lim and Iwata does not specifically disclose having the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

Lemirande further discloses the feature by using a current sensing resistor (R44) located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first

voltage applied to the first node and a second voltage applied to the second node, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Allowable Subject Matter

3. **Claim 2** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **Claim 2**, the applied references fail to disclose or render the obvious, the automatically and manually folded portable wireless terminal of claim 1, wherein the motor overcurrent monitoring section comprises: the first node connected to a battery output line for applying a first voltage corresponding to the battery voltage to a first input end of the control device; the second node connected between the first node and the motor for applying a second voltage, which corresponds to a current supplied to the motor, to a second input end of the control device; and the current sensing resistor located between the first node and the second node for sensing the current supplied to the motor from the first node through the second node.

Response to Arguments

4. Applicant's arguments filed 12 January 2006 have been fully considered but they are not persuasive.

The Examiner respectfully disagrees with applicant's arguments as the applied reference(s) provide more than adequate support and to further clarify (see the above claims and comments in this section).

5. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See applicant's arguments in the paragraph bridging pgs. 5-6. In this case, Iwata discloses a mechanism to control the operations (e.g., rotation/direction) of a motor to stop or reverse direction/rotation of a movable body such as a window of automobile (see col. 2, lines 30-62; col. 30, lines 14-20). This mechanism would be applicable to a movable body such as the sub-body of a foldable cellular phone. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to clearly discloses the features of the instant application, in order to provide a control device in which rush current, which is generated during operation of a switch, and abnormal current which is generated by a foreign object being caught between bodies can be clearly distinguished to prevent faulty

operation, as taught by Iwata (see col. 2, lines 56-62). As a note, Lim discloses having a cellular phone with a foldable body that is movable. Furthermore, both Lim and Iwata disclose having a motor for rotating of a movable body. In addition to the applied references, the Examiner suggests the applicant review one of the cited prior art made of record (see Nishibe et al. - US 5,453,669; col. 7, lines 51-60; Figs. 1-5).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Willie J. Daniel, Jr. whose telephone number is (571) 272-7907. The examiner can normally be reached on 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor(s), Marsha D. Banks-Harold can be reached on (571) 272-7905 or Nick Corsaro can be reached on (571) 272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WJD,JR/

WJD,JR
03 August 2006

ERIKA A. GARY
PRIMARY EXAMINER